

---

# Bacteriocins Of Lactic Acid Bacteria Microbiology Genetics And Applications

---

Right here, we have countless book **Bacteriocins Of Lactic Acid Bacteria Microbiology Genetics And Applications** and collections to check out. We additionally meet the expense of variant types and plus type of the books to browse. The good enough book, fiction, history, novel, scientific research, as without difficulty as various further sorts of books are readily reachable here.

As this Bacteriocins Of Lactic Acid Bacteria Microbiology Genetics And Applications, it ends in the works living thing one of the favored book Bacteriocins Of Lactic Acid Bacteria Microbiology Genetics And Applications collections that we have. This is why you remain in the best website to look the unbelievable books to have.

*Bacteriocins Of Lactic Acid Bacteria  
Microbiology Genetics And  
Applications*

2023-05-08

---

## LYRIC STEWART

---

**New Horizons in Biotechnology** Academic Press

As antibacterial compounds, bacteriocins have always lived in the shadow of those medically important, efficient and often broad-spectrum low-molecular mass antimicrobials, well known even to laypeople as antibiotics. This is despite the fact that bacteriocins were discovered as early as 1928, a year before the penicillin saga started. Bacteriocins are antimicrobial proteins or oligopeptides, displaying a much narrower activity spectrum than antibiotics; they are mainly active against bacterial strains taxonomically closely related to the producer strain, which is usually immune to its own bacteriocin. They form a heterogenous

group with regard to the taxonomy of the producing bacterial strains, mode of action, inhibitory spectrum and protein structure and composition. Best known are the colicins and microcins produced by Enterobacteriaceae. Many other Gram-negative as well as Gram-positive bacteria have now been found to produce bacteriocins. In the last decade renewed interest has focused on the bacteriocins from lactic acid bacteria, which are industrially and agriculturally very important. Some of these compounds are even active against food spoilage bacteria and endospore formers and also against certain clinically important (food-borne) pathogens. Recently, bacteriocins from lactic acid bacteria have been studied intensively from every possible scientific angle: microbiology, biochemistry, molecular biology and food technology. Intelligent screening is going on to find novel compounds with unexpected properties, just as has happened

(and is still happening) with the antibiotics. Knowledge, especially about bacteriocins from lactic acid bacteria, is accumulating very rapidly.

*Lactic Acid Bacteria* CRC Press

Lactic acid bacteria (LAB) are a diverse group of bacteria that comprise low GC content Gram-positive cocci or rods that produce lactic acid as the major end product of the fermentation process. Bifidobacterium genera may also be considered as a part of the LAB group for possessing some similar phenotypical characteristics despite the higher GC content. The key feature of LAB metabolism is efficient carbohydrate fermentation. This contributes to the production of several microbial metabolites that result in the improvement of flavor and texture of fermented foods, in addition to its positive impact on human health when LAB is administered as a probiotic. The book deals with advances made in the functionalities of LAB, such as their effect on vitamin D receptor expression, impact on neurodegenerative pathologies, production of B-vitamins for food bio-enrichment, production of bacteriocins to improve gut microbiota dysbiosis, production of metabolites from polyphenols and their effects on human health, effect on reducing the immunoreaction of food allergens, as biological system using time-temperature to improve food safety, and the use of probiotics in animal feed. The book also reviews the use of LAB and probiotic technologies to develop new functional foods and functional pharmaceuticals.

*Purification and Characterization of Bacteriocin from Lactic Acid Bacteria Isolated from Fermented Foods* Springer

Bacteriocins of Lactic Acid Bacteria is based on the 1990 Annual Meeting of the Institute of Food Technologists held in Dallas,

Texas. It describes a number of well-characterized bacteriocins and, where possible, discusses practical applications for those that have been defined thus far from the lactic acid bacteria. The book begins with an introductory overview of naturally occurring antibacterial compounds. This is followed by discussions of methods of detecting bacteriocins and biochemical procedures for extraction and purification; genetics and cellular regulation of bacteriocins; bacteriocins based on the genera of lactic acid bacteria Lactococcus, Lactobacillus, Pediococcus, and Leuconostoc, and related bacteria such as Carnobacterium and Propionibacterium; and the regulatory and political aspects for commercial use of these substances. The final chapter sets out the prognosis for the future of this dynamic area. The information contained in this book should benefit those with interest in the potential for industrial use of bacteriocins as preservative ingredients. Anyone interested in lactic acid bacteria or the biosynthesis, regulation, and mechanisms of inhibition of these proteinaceous compounds will also appreciate the material presented. These include food scientists, microbiologists, food processors and product physiologists, food toxicologists, and food and personal product regulators.

**Prokaryotic Antimicrobial Peptides** Horizon Scientific Press  
Foods fermented with lactic acid bacteria are an important part of the human diet. Lactic acid bacteria play an essential role in the preservation of food raw materials and contribute to the nutritional, organoleptic, and health properties of food products and animal feed. The importance of lactic acid bacteria in the production of foods throughout the world has resulted in a continued scientific interest in these micro-organisms over the

last two decades by academic research groups as well as by industry. This research has resulted in a number of important scientific breakthroughs and has led to new applications. The most recent of these advances is the establishment of the complete genome sequences of a number of different lactic acid bacterial species. To communicate and stimulate the research on lactic acid bacteria and their applications, a series of tri-annual symposia on lactic acid bacteria was started in 1983 under the auspices of the Netherlands Society for Microbiology (NVVM), which was later also supported by the Federation of European Microbiological Societies (FEMS). The aim of these state-of-the-art symposia is to offer a unique platform for universities, institutes, and industry in this area of biotechnology, to present recent work, to obtain information on new developments, and to exchange views with colleagues from all over the world on scientific progress and applications. The growing number of participants at these symposia has been a clear demonstration of the interest of the international industrial and scientific community in this area of research. The 7th Symposium is based on a number of plenary lectures that review the scientific progress of the last years in the different areas of research on lactic acid bacteria, and which are documented in this special issue of Antonie van Leeuwenhoek.

**Application of Protective Cultures and Bacteriocins for Food Biopreservation** Bacteriocins of Lactic Acid Bacteria Microbiology, Genetics and Applications  
Lactic acid bacteria (LAB) and bifidobacteria are among the most important groups of microorganisms used in the food industry. For example, LAB are used in the production of fermented

products, such as yogurts, cheese, and pickled vegetables. In addition, LAB can inhibit the growth of spoilage microbes and/or pathogens in their environment by lowering the pH and/or through the production of antimicrobial peptides, called bacteriocins. Both LAB and bifidobacteria are also thought to have health-promoting abilities and many are used as probiotics for the prevention, alleviation, and treatment of intestinal disorders in humans and animals. In this comprehensive book, expert international authors review the most recent cutting-edge research in these areas. Topics include: lactobacillus genomics \* bifidobacterium gene manipulation technologies \* metabolism of human milk oligosaccharides in bifidobacteria \* proton-motive metabolic cycles \* oxidative stress and oxygen metabolism \* bifidobacterium response to O<sub>2</sub> \* bile acid stress in LAB and bifidobacteria \* protein structure quality control \* bacteriocin classification and diversity \* lactococcal bacteriocins \* lactobacilli bacteriocins \* other bacteriocins \* production of optically pure lactic acid \* antihypertensive metabolites from LAB \* the anti-H. pylori effect of lactobacillus gasseri \* probiotics for allergic rhinitis \* probiotics health claims in Japan and Europe.

**Biology of Microorganisms on Grapes, in Must and in Wine** Springer

The use of microorganisms and their metabolites for the preservation of foods began in prehistory. Lactic acid bacteria are generally recognized as safe (GRAS) for this purpose. They produce organic acids, diacetyl, acetoin, hydrogen peroxide, reuterin, reutericyclin and bacteriocins, all of which inhibit foodborne pathogens and spoilage microorganisms. Bacteriocins and the strains that produce them are particularly effective as

bio-preservatives in cheese, meat and vegetables. They hold the promise of ensuring the quality and safety of ready-to-eat, extended-shelf-life, fresh-tasting and minimally processed foods without chemical preservatives. This Research Topic provides an overview of bacterial cultures, bacteriocins and other metabolites that have shown promise for use as antimicrobial bio-preservatives in foods in general. Articles describing novel analytical technologies, strategies to reduce or eliminate pathogens in food systems or emerging technologies for the production or use of protective cultures or their bacteriocins are presented.

Probiotic Dairy Products John Wiley & Sons

Biotechnology: Prospects and Applications covers the review of recent developments in biotechnology and international authorship presents global issues that help in our understanding of the role of biotechnology in solving important scientific and societal problems for the benefit of mankind and environment. A balanced coverage of basic molecular biology and practical applications, relevant examples, colored illustrations, and contemporary applications of biotechnology provide students and researchers with the tools and basic knowledge of biotechnology. In our effort to introduce students and researchers to cutting edge techniques and applications of biotechnology, we dedicated specific chapters to such emerging areas of biotechnology as Emerging Dynamics of Brassinosteroids Research, Third generation green energy, Bioremediation, Metal Organic Frameworks: New smart materials for biological application, Bioherbicides, Biosensors, Fetal Mesenchymal Stem Cells and Animal forensics. Biotechnology: Prospects and Applications will

be highly useful for students, teachers and researchers in all disciplines of life sciences, agricultural sciences, medicine, and biotechnology in universities, research stations and biotechnology companies. The book features broader aspects of the role of biotechnology in human endeavor. It also presents an overview of prospects and applications while emphasizing modern, cutting-edge, and emerging areas of biotechnology. Further, it provides the readers with a comprehensive knowledge of topics in food and agricultural biotechnology, microbial biotechnology, environmental biotechnology and animal biotechnology. The chapters have been written with special reference to the latest developments in above broader areas of biotechnology that impact the biotechnology industry. A list of references at the end of each chapter is provided for the readers to learn more about a particular topic. Typically, these references include basic research, research papers, review articles and articles from the popular literature.

**Investigation of the Antimicrobial Effect of Bacteriocins of Lactic Acid Bacteria in Alcoholic Beverages** Springer Science & Business Media

The practice of biotechnology, though different in style, scale and substance in globalizing science for development involves all countries. Investment in biotechnology in the industrialised, the developing, and the least developed countries, is now amongst the widely accepted avenues being used for economic development. The simple utilization of kefir technology, the detoxification of injurious chemical pesticides e.g. parathion, the genetic tailoring of new crops, and the production of a first of a kind of biopharmaceuticals illustrate the global scope and content

of biotechnology research endeavour and effort. In the developing and least developed nations, and in which the 9 most populous countries are encountered, problems concerning management of the environment, food security, conservation of human health resources and capacity building are important factors that influence the path to sustainable development. Long-term use of biotechnology in the agricultural, food, energy and health sectors is expected to yield a windfall of economic, environmental and social benefits. Already the prototypes of new medicines and of prescription fruit vaccines are available. Gene based agriculture and medicine is increasingly being adopted and accepted. Emerging trends and practices are reflected in the designing of more efficient bioprocesses, and in new research in enzyme and fermentation technology, in the bioconversion of agro industrial residues into bio-utility products, in animal healthcare, and in the bioremediation and medical biotechnologies. Indeed, with each new day, new horizons in biotechnology beckon.

**Bacteriocins of Lactic Acid Bacteria** Springer Science & Business Media

Microbes produce an extraordinary array of defense systems. This book tells the fascinating story about the evolutionary histories of bacteriocins and the ecological roles of these biological weapons in microbial communities. The book makes compelling reading for a multi-faceted scientific audience, including those working in the fields of biodiversity and biotechnology, notably in the human and animal health domain.

**Production of Phytase from Bacteriocin from Lactic Acid Bacteria, Strain Kv 1, for Potential Use as Probiotics**

Springer Science & Business Media

In agricultural education and research, the study of agricultural microbiology has undergone tremendous changes in the past few decades, leading to today's scientific farming that is a backbone of economy all over the globe. *Microorganisms in Sustainable Agriculture, Food, and the Environment* fills the need for a comprehensive volume on recent advances and innovations in microbiology. The book is divided into four main parts: food microbiology; soil microbiology; environmental microbiology, and industrial microbiology and microbial biotechnology.

Progress in Food Preservation CRC Press

This book introduces readers to basic studies on and applied techniques involving lactic acid bacteria, including their bioengineering and industrial applications. It summarizes recent biotechnological advances in lactic acid bacteria for food and health, and provides detailed information on the applications of these bacteria in fermented foods. Accordingly, it offers a valuable resource for researchers and graduate students in the fields of food microbiology, bioengineering, fermentation engineering, food science, nutrition and health.

*Common Mechanism of Action of Bacteriocins from Lactic Acid Bacteria* Springer Science & Business Media

The second edition of the book begins with the description of the diversity of wine-related microorganisms, followed by an outline of their primary and energy metabolism. Subsequently, important aspects of the secondary metabolism are dealt with, since these activities have an impact on wine quality and off-flavour formation. Then chapters about stimulating and inhibitory growth factors follow. This knowledge is helpful for the growth

management of different microbial species. The next chapters focus on the application of the consolidated findings of molecular biology and regulation the functioning of regulatory cellular networks, leading to a better understanding of the phenotypic behaviour of the microbes in general and especially of the starter cultures as well as of stimulatory and inhibitory cell-cell interactions during wine making. In the last part of the book, a compilation of modern methods complete the understanding of microbial processes during the conversion of must to wine. This broad range of topics about the biology of the microbes involved in the vinification process could be provided in one book only because of the input of many experts from different wine-growing countries.

#### Bacteriocins of Lactic Acid Bacteria Springer

Microorganisms participate in both the manufacture and spoilage of foodstuffs. In *Food Microbiology Protocols*, expert laboratorians present a wide ranging set of detailed techniques for investigating the nature, products, and extent of these important microorganisms. The methods cover pathogenic organisms that cause spoilage, microorganisms in fermented foods, and microorganisms producing metabolites that affect the flavor or nutritive value of foods. Included in the section dealing with fermented foods are procedures for the maintenance of lactic acid bacteria, the isolation of plasmid and genomic DNA from species *Lactobacillus*, and the determination of proteolytic activity of lactic acid bacteria. A substantial number of chapters are devoted to yeasts, their use in food and beverage production, and techniques for improving industrially important strains. There are also techniques for the conventional and molecular

identification of spoilage organisms and pathogens, particularly bacteria, yeasts, and the molds that cause the degradation of poultry products. Each method is described step-by-step for assured results, and includes tips on avoiding pitfalls or developing extensions for new systems.. Comprehensive and timely, *Food Microbiology Protocols* is a gold-standard collection of readily reproducible techniques essential for the study of the wide variety of microorganisms involved in food production, quality, storage, and preservation today.

#### Applications and Fundamentals CRC Press

This volume presents a wide range of new approaches aimed at improving the safety and quality of food products and agricultural commodities. Each chapter provides in-depth information on new and emerging food preservation techniques including those relating to decontamination, drying and dehydration, packaging innovations and the use of botanicals as natural preservatives for fresh animal and plant products. The 28 chapters, contributed by an international team of experienced researchers, are presented in five sections, covering: Novel decontamination techniques Novel preservation techniques Active and atmospheric packaging Food packaging Mathematical modelling of food preservation processes Natural preservatives This title will be of great interest to food scientists and engineers based in food manufacturing and in research establishments. It will also be useful to advanced students of food science and technology.

#### **Food Microbiology Protocols** John Wiley & Sons

*Probiotic Dairy Products*, 2nd Edition The updated guide to the most current research and developments in probiotic dairy products The thoroughly revised and updated second edition of

Probiotic Dairy Products reviews the recent advancements in the dairy industry and includes the latest scientific developments in regard to the 'functional' aspects of dairy and fermented milk products and their ingredients. Since the publication of the first edition of this text, there have been incredible advances in the knowledge and understanding of the human microbiota, mainly due to the development and use of new molecular analysis techniques. This new edition includes information on the newest developments in the field. It offers information on the new 'omic' technologies that have been used to detect and analyse all the genes, proteins and metabolites of individuals' gut microbiota. The text also includes a description of the history of probiotics and explores the origins of probiotic products and the early pioneers in this field. Other chapters in this resource provide valuable updates on genomic analysis of probiotic strains and aspects of probiotic products' production and quality control. This important resource: Offers a completely revised and updated edition to the text that covers the topic of probiotic dairy products Contains 4 brand new chapters on the following topics: the history of probiotics, prebiotic components, probiotic research, and the production of vitamins, exopolysaccharides (EPS), and bacteriocins Features a new co-editor and a host of new contributors, that offer the latest research findings and expertise Is the latest title in Wiley's Society of Dairy Technology Technical Series Probiotic Dairy Products is an essential resource for dairy scientists, dairy technologists and nutritionists. The text includes the results of the most reliable research in field and offers informed views on the future of, and barriers to, the progress for probiotic dairy products.

### **The Production of Bacteriocins from Lactic Acid Bacteria :** Springer Science & Business Media

Bacteriocins produced by three strains of *Carnobacterium piscicola* and by a *Lactobacillus sake* strain were isolated, partially characterized and purified to homogeneity. These were termed carnocin 124, carnocin 109, carnocin 75 and sakacin 38. The synthesis of all four antimicrobials was shown to be inducible by extracellular peptides, which were specific, controlling the production of both the bacteriocins and their cognate immunity proteins. Amino acid sequence analysis of the purified bacteriocins indicated that carnocins 75, 109, and 124 were homologous to piscicolin JG126 (also described as piscicocin V1a) while sakacin 38 showed homology to sakacin P. The locus of carnocin 75 was cloned from *C. piscicola* NFBC75 and the amino acid sequence of the putative bacteriocin-inducing peptide and immunity protein were determined by translation of their genetic determinants. In addition, enterocin 37 produced by *Enterococcus faecalis* NFBC37 was shown to be identical to enterocin AS48 by amino acid sequence analysis and mass spectroscopy of the purified peptide. Curing and Southern hybridization analysis showed the enterocin 37 operon to be associated with a 60 Kb plasmid in *E. faecalis* NFBC37. The plasmid was transferred by conjugation into *E. faecalis* JH2SS, conferring both bacteriocin production and immunity to the recipient strain. It was observed that the level and rate of enterocin 37 production was determined by the pH of the growth media. Also the production of enterocin 37 shown to be affected at a transcriptional level on the basis of sugar utilization in both the wild type and transconjugant strains. The bacteriocin



carnocin 124 was evaluated as a means of preservation in fresh pork sausage, where it could allow for the reduction or replacement of sulfites currently employed in the product. The bacteriocin producing culture was used to ferment a milk based growth medium to produce a buttermilk-like product which was pasteurized, condensed and spray dried to yield a fermented milk powder. The resultant powder was subsequently incorporated into fresh pork sausage. The inclusion of the fermented ingredient did not result in an increase in the shelf-life of the product; however, it was shown to be effective against *Listeria* for the duration of the trial, reducing the levels by 99.9% from initial valued of  $5.5 \times 10^5$  to approximately  $5 \times 10^2$  CFU/g. Chitosan glutamate was also added to the product formations. Under chilled conditions its inclusion resulted in a 10-fold decrease in the total microbial load compared with the control for the first 10 days of the trial indicating its potential as a natural preservative at chilled temperatures.

*Investigation of Bacteriocins from Lactic Acid Bacteria and Their Impact in Winemaking* Taylor & Francis

The book will provide an overview of the advancement of fundamental knowledge and applications of antimicrobial peptides in biomedical, agricultural, veterinary, food, and cosmetic products. Antimicrobial peptides stand as potentially great alternatives to current antibiotics, and most research in this newly-created area has been published in journals and other periodicals. It is the editors' opinion that it is timely to sum up the most important achievements in the field and provide the scientific community in a reference book. The goals of this project include illustrating the achievements made so far, debating the

state of the art, and drawing new perspectives.

The Bacteriocins of Lactic Acid Bacteria Springer Science & Business Media

Through four editions, *Lactic Acid Bacteria: Microbiological and Functional Aspects*, has provided readers with information on the how's and why's lactic acid-producing fermentation improves the storability, palatability, and nutritive value of perishable foods. Thoroughly updated and fully revised, with 12 new chapters, the Fifth Edition covers regulatory aspects globally, new findings on health effects, properties and stability of LAB as well as production of target specific LAB. The new edition also addresses the technological use of LAB in various fermentations of food, feed and beverage, and their safety considerations. It features the detailed description of the main genera of LAB as well as such novel bacteria as fructophilic LAB and novel probiotics and discusses such new targets as cognitive function, metabolic health, respiratory health and probiotics. Key Features: In 12 new chapters, findings are presented on health effects, properties and stability of LAB as well as production of target specific LAB Covers such novel bacteria as fructophilic LAB and novel probiotics Presents new discoveries related to the mechanisms of lactic acid bacterial metabolism and function Covers the benefits of LAB, both in fermentation of dairy, cereal, meat, vegetable and silage, and their health benefits on humans and animals Discusses the less-known role of LAB as food spoilers Covers the global regulatory framework related to safety and efficacy

**Bacteriocins of Lactic Acid Bacteria** Frontiers Media SA

Bacteriocins of Lactic Acid Bacteria Microbiology, Genetics and Applications Springer



Production of and Immunity Against Bacteriocins in Lactic Acid Bacteria Springer Science & Business Media

Lactic acid bacteria (LAB) have historically been used as starter cultures for the production of fermented foods, especially dairy products. Over recent years, new areas have had a strong impact on LAB studies: the application of omics tools; the study of complex microbial ecosystems, the discovery of new LAB species, and the use of LAB as powerhouses in the food and medical industries. This second edition of *Biotechnology of Lactic Acid Bacteria: Novel Applications* addresses the major advances in the fields over the last five years. Thoroughly revised and updated,

the book includes new chapters. Among them: The current status of LAB systematics; The role of LAB in the human intestinal microbiome and the intestinal tract of animals and its impact on the health and disease state of the host; The involvement of LAB in fruit and vegetable fermentations; The production of nutraceuticals and aroma compounds by LAB; and The formation of biofilms by LAB. This book is an essential reference for established researchers and scientists, clinical and advanced students, university professors and instructors, nutritionists and food technologists working on food microbiology, physiology and biotechnology of lactic acid bacteria.